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from. Wreckage of oriental origin, including part of a vessel's rail with a money box cut into it and containing some Chinese coins, had been picked up on the shore of Montague Island, Prince William Sound. The season at Kadiak had been a fine one, the crop of potatoes and especially of cauliflower being very successful, but at Iliamna trading station, Cook's Inlet, a freshet occurred during the summer, by which the course of a small stream was changed and the trader's house actually washed away. A gale in July at Cold Bay, on the peninsula, caught a sea-otter party of Aleuts far from land in their kayaks, and for forty-eight hours they were obliged to use their paddles to keep from foundering. Five were drowned. The volcano of St. Augustin in Cook's Inlet continues to emit smoke and steam from many fissures. Water is still very scarce there, but several white otter hunters have established themselves upon the island for the winter. In southeastern Alaska the Treadwell or Paris mine is proving a great success. The new mill, numbering 120 stamps, sent down \$95,000 as the result of the first twenty-five days' work, and there is an almost unlimited quantity of low grade ore milling, net, about \$5.00 to \$8.00 gold per ton. This has stimulated work on the gold mines near Sitka, which are much richer but less extensive.

ASTRONOMICAL NOTES.

Meeting of the Astronomische gesellschaft.—*Nature* (xxxii., 516) gives a rather full account of the meeting of the Astronomische gesellschaft held at Geneva, August 19–22. Among about fifty members present we see the names of Struve, Newcomb, Christie, Auwers, Krueger, Tisserand, Weiss, and Schoenfeld. Reports were read on the present state of the computation of planetary orbits, on the zone work of the society, and on the photographic mapping of the stars of the Bonn *Durchmusterung* begun by Gill at the Cape. Professor Auwers read a paper by Professor Pickering on the photometric survey of the heavens, which was heard with especial interest; and Staatsrath Struve, in presenting photographs of the Pulkowa 30-inch refractor, expressed his complete satisfaction with the instrument. On the last day of the meeting addresses were made by Professor Gyldén on the graphic representation of planetary orbits, by Professor Newcomb on perturbations and their numerical calculation, and by Dr. Mueller on modern photographic apparatus. Other papers were read by Professors Bakhuyzen, Seeliger, Safärik and Weiss. The subject of most general immediate interest was the discussion of the sixth resolution of the Washington meridian

conference, recommending a change in the beginning of the astronomical day. Struve, Folie and Pechüle seemed to be the only members in favor of the change, while Newcomb, Weiss, Krueger, Dunér, Auwers, Tietjen and Safärik, spoke in opposition to it. Professor Gyldén thought it inexpedient to make the change at present, though he was of the opinion that, in twenty or thirty years hence, the majority of astronomers would be in favor of a universal time. The statement by Struve that in the Royal astronomical society the majority are in favor of the universal time, has been corrected by Mr. Downing of the Greenwich observatory, who says (*Nature* xxxii., 353) that "the Royal astronomical society as a body has not expressed any opinion on the subject. And judging from the individual expressions of opinion which have been published, I should imagine that here, as at Geneva, the majority of real workers in our science (with the probable exception of those engaged on solar work) would be opposed to the proposed change." No resolution in regard to the matter was passed by the gesellschaft. The next meeting will be held at Kiel in 1887.

Displacement of solar lines.—In order to obtain, if possible, further evidence upon the disputed question as to whether the displacements and distortions of lines in solar spectra are due to actual drag of masses of gas to or from us, sometimes calling for velocities of 400 or 500 km. per second, M. Trepied proposes, in the *Bulletin astronomique* for August, an arrangement of apparatus by which, after the light has passed through slit and collimator, the beam shall be divided so as to show two spectra superimposed at any desired point of either, thus allowing simultaneous optical examination, or micrometrical measurement, upon two lines from exactly the same part of the sun. He then proposes to test Fizeau's law that the ratio of displacement to wave-length, $\frac{\Delta\lambda}{\lambda}$, should be constant throughout the spectrum, for any one velocity of the luminous source to or from us. He will begin with the C and F lines of hydrogen, the ratio of whose wave-lengths is about 1.35 to 1.00. It would seem as if this difference should show plainly in the relative displacements, but it must be remembered that the largest of these take the form of very irregular distortions of the lines, and the different brightness and color of the lines and their background may perhaps differently affect their visible or measurable limits. His results will be awaited with interest.

Parallax of 40° Eridani.—Professor Hall publishes, in No. 2682 of the *Astronomische nachrichten*, the results of observations made in 1883 and 1884

to determine the annual parallax of the star 40° Eridani. The principal star of this system has a proper motion of $4''$ a year; and, at a distance of $82''$, there is a double companion, which has the same proper motion, while nearly between them is a small star which does not move. Professor Hall finds for the parallax of 40 Eridani

$$\pi = 0''.233 \pm 0''.0208.$$

a result rather smaller than might have been expected, but one which he considers worthy of considerable confidence.

Comet Tuttle (1790 II.).—Swift reports having found the comet on August 13. He describes it as "fairly bright on a dark sky, and shows a strong condensation at the centre." As far as we have learned, he is the only one who has seen the comet at this return, except the astronomers at Nice.

The nebula in Andromeda.—The new star in the Andromeda nebula continues to decrease in brightness. On October 10 it was estimated as 9.9 magnitude with the transit circle of the U. S. naval observatory. This estimate depends upon the same star used in the previous observations (*Science* vi., 310).

Comet 1881 III (b) Tebbutt.—Dr. de Ball intends to compute the orbit of the above comet, and calls for any observations still unpublished. Address, "Dr. de Ball, Observatoire, Ougrée, Liège, Belgium."

NOTES AND NEWS.

THE curriculum of the University of Michigan has been altered and enlarged in order to provide a specific course of study for students who wish to devote their time largely to biological work, either as a preparation for the study of medicine or with a view to teaching or engaging in biological research. Zoölogy, botany, and physiology are the most prominent subjects of the course, but full opportunity is given for extended work in physics, chemistry, paleontology, and other sciences.

— The first one of a course of ten lectures on physiology and hygiene, under the auspices of the Cincinnati society of natural history, was given on October 3. These lectures are free to teachers of the public schools, and the interest is shown by the application of about seventy-five teachers for tickets to the course. This is the second course given by the society, the first having been on botany.

— Cable dispatches announce the death of Thomas Davidson, preëminently the British student of Brachiopoda. He was born in Edinburgh, May 17, 1817, and received most of his education on the continent. A review of his latest work will

be found in *Science* (v., 409). The monograph of recent Brachiopoda, there referred to as in preparation, has actually been completed. Under date of June 1, in a letter to a friend in this country, which we have been permitted to see, he says that it will be accompanied by 30 plates, containing 865 figures, and adds: "I can assure you that this work has taken me a long time to complete, and, since I have been ill for several months, it is fortunate that all is ready to send to the printer. I have thus been able to bring to successful conclusion all that I had proposed to accomplish, and I am now ready to leave this world as soon as God wills." This indefatigable investigator adds that he has also completed a bibliography of the Brachiopoda which will occupy about 200 quarto pages and contain about 3400 titles; the first part will be printed by the Palaeontographical society this year and the balance in the volume for 1886. "I have been able," he concludes, "to make a very rich and nearly complete collection of recent Brachiopoda, and I propose to bequeath the whole of this, as well as all my fossils, to the British museum."

— James Macfarlane, well-known for his useful 'Geological railway guide' and 'Geologist's travelling handbook,' died suddenly on the 12th instant at his home in Towanda, Penn., of heart disease. He was born Sept. 2, 1819, at Gettysburg, Penn.

— In the *Philosophical magazine* for August, Shelford Bidwell, Esq., in a paper entitled 'The sensitiveness of selenium to light and the development of a similar property in sulphur,' describes a series of very interesting experiments, which would seem to show that the action of light in varying the resistance of a selenium cell arises from the fact that the conductivity of the cell is due to a selenide of the metal with which it is annealed (the crystalline selenium itself being practically a non-conductor), and that the formation of this selenide is assisted by direct radiation of light. With sulphur and silver he formed cells showing the same variation of resistance in light and darkness, and showed very plainly that the union of sulphur and silver into the sulphide, at ordinary temperatures, is greatly assisted by direct radiation, and is not due to rise of temperature of the substances themselves. The whole analogy of the actions of sulphur and selenium in the two cases, coupled with the enormously high resistance of pure selenium when crystallized between glass plates or substances with which it does not combine, seem to render his conclusions highly probable. The whole paper is of great interest.

— The Russian government has just despatched one of the foremost mining authorities of the day, M. Gulishambaroff, to Askabad, in Central Asia,